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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,089	09/08/2005	Arne Bartels	11150/88	2376

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EXAMINER	
NWUGO, OJIAKO K	

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2609	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,089	BARTELS, ARNE	
	Examiner	Art Unit	
	Ojiako Nwugo	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) The invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claim 13,15-19 and 21 rejected under 35 U.S.C. 102(e) as being anticipated by Takayuki Tsuji et al, US patent application Publication 2002/0183929. (Hereafter referred to as Tsuji)

Regarding **Claim 13,** Tsuji discloses in Paragraph 90 using equation 9 a method for determining the relative speed between object and vehicle given by

Vs=(Zv(N-1)-Zv(0))/.DELTA.T

Where Vs = Relative speed

Zv(0) = Position vector at time (0)

Zv(N-1) = Position vector at time (N-1)

DELTA.T = time interval between positions

This reads on the first limitation of **Claim 13,** "determining a relative speed between the object and the motor vehicle;"

As to the second limitation of **Claim 13,** "determining a travel direction of the object relative to the motor vehicle", Tsuji discloses in paragraph 88 a method for determining relative movement vector given equation 8 below

$$Xv(j) = (Z(j) - Zav) .times. 1 x 1 z - Xav$$

$$Yv(j) = (Z(j) - Zav) .times. 1 y 1 z - Yav$$

$$Zv(j) = Z(j)$$

$$j = 0, N - 1 \qquad (8)$$

As the vector extending from the position coordinates Pv(N-1) to the position coordinates Pv(0) calculated by the equations (8), the aforementioned relative movement vector can be obtained. As described above, an approximate straight line approximating the locus of relative movement of an object to the automotive vehicle 10 is calculated, based on a plurality of (N) data items of position data during a monitoring time period .DELTA.T.

As to third limitation of **claim 13,** "determining a position of the object relative to the motor vehicle", Tsuji discloses in paragraph 57 and figures 1 and 5 the use of cameras **1R** and **1L** to capture images and objects in front of the vehicle. The objects that are captured on both images are horizontally displaced from each other so that it is possible to calculate a distance from the vehicle 10 to the object.

As to the fourth limitation of **claim 13,** "warning the driver if: (a) the travel direction of the object corresponds to a travel direction of the motor vehicle; (b) the relative speed between the object and the motor vehicle is within a predetermined range bounded by a lower range boundary and an upper range boundary, the predetermined range including a zero value: and (c) the position of the object is within the warning region."

In paragraph 113 Tsuji discloses that the probability of collision is determined on condition that the expressions (10a) and (10b) are satisfied, and the warning is issued according to the position which reads on (c) "the position of the object is within the warning region." and the relative movement vector of the object. Where the expression (10a) and (10b):

$VCAR/2 \leq Vs \leq VCAR \times 3/2$ (10a)

$(|VCAR-Vs| \leq VCAR/2)$

$Zv(0)VCAR \leq T$ (10b)

are use to determine the upper and lower boundaries of relative speed about which warnings are issued which reads on (b) "the relative speed between the object and the motor vehicle is within a predetermined range bounded by a lower range boundary and an upper range boundary, the predetermined range including a zero value." Further vehicles running in opposites lanes excluded from the objects of warning. Thus only vehicles traveling in the same direction generate warning, which reads on (a) "a) the travel direction of the object corresponds to a travel direction of the motor vehicle"

Regarding **Claim 15**, "wherein the upper range boundary and the lower range boundary are functions of an initial speed of the motor vehicle" Tsuji discloses in paragraph 90 expression 10a above. Where Vs is the relative speed and VCAR is vehicle speed. Thus upper and lower range boundaries are functions of vehicle speed

Regarding **claim 16**, "the warning is independent of a direction of entry of the object into the warning region and is independent of a direction of exit of the object from the warning region". Tsuji discloses in paragraphs 90 and 113 as well as figure 3 and 4

that warning are generated on the basis of relative speed, distance and movement vector (travel direction) and as such Tsuji is capable of dictating all obstacles in warning region on the bases of the aforementioned criterion irrespective of direction of entry into the warning region.

Regarding **Claim 17**, "The warning is independent of a background of the object that enters the warning region and is independent of standing objects, an alignment of standing objects and a background of the standing objects". Tsuji in paragraph 114 discloses that the probability of collision between object and vehicle is determined based on the movement vector calculated. A warning is generated depending on the high probability of collision as disclosed in paragraph 12. Thus it is inherent that all objects that generate warning must be moving eliminating all standing objects.

Regarding **claim 18 and 19,** "classifying driving situations, each classified driving situation including information as to whether the warning be performed if an object enters the warning region; determining a current driving situation of the motor vehicle and the object; ascertaining the classified driving situation that corresponds to the current driving situation; and activating a warning function that corresponds to the classified driving situation ascertained in the ascertaining step" and "wherein the driving situations classified in the classifying step include information relating to two lanes lateral to a lane of the motor vehicle"

From the application specification the classification process for driving situation in a nutshell determines whether an objects meets the criterion for issuing a warning as addressed in **claim 13** above. As such does not further limit claim 13.

Further Tsuji discloses in figures 3 and 4 a flow chart, which determines how and when warnings are issued. Tsuji detects objects around the vehicle and issues warming with criterion mention in **claim 13**, which necessarily includes the two lanes lateral to lane of the vehicle if the vehicle situated in such a way that it has two lanes lateral to its lane.

Regarding **claim 21**, "comprising one of (a) recording and (b) calculating an angle as an input variable for the warning in a travel plane of the motor vehicle substantially corresponding to the travel direction of the motor vehicle and a straight line that spans a sensor apparatus adapted to monitor the warning region and the object."

Tsuji discloses in paragraph 72 and in figure 2, step S20 in which the yaw rate is read into a recording device and from there is integrated over time thus yielding the angle of turn in theta radians is calculated as shown in figure 14 and used as a variable in the input determination process.

Claims 13,20, 22- 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Alvise Sartori et al, US patent application number publication 2003/01417762. (Hereafter referred to as Sartori)

Regarding **claim 13,** its first limitation states "determining a relative speed between the object and the motor vehicle", Sartori discloses in Paragraph 15 discloses a method of detecting relative speed by edge recognition forming rectangles with said edges, forming rectangles with said edges and the comparing the rectangles with a set of patterns.

As to the second limitation "determining a travel direction of the object relative to the motor vehicle". In paragraph 16 Sartori discloses a method of determining travel direction by the technique based on a phase difference to obtain an estimate of the optical flow in a particular direction, to be precise in the direction of the street or road on which the vehicle is moving.

As to the third limitation, "determining a position of the object relative to the motor vehicle", in paragraph 7 Sartori discloses that the detection device also provides a qualitative idea of the distance of the object relative to the vehicle and, therefore, determines the position of object relative to vehicle.

As the fourth limitation, "warning the driver if: (a) the travel direction of the object corresponds to a travel direction of the motor vehicle; (b) the relative speed between the object and the motor vehicle is within a predetermined range bounded by a lower range boundary and an upper range boundary, the predetermined range including a zero value: and (c) the position of the object is within the warning region" Sartori discloses in paragraph 54 that the trajectory of the approaching vehicle must be determined if it is traveling in same direction as own vehicle, The speed is within range of own vehicle and is within a short distance from own vehicle.

Regarding **claim 20**, "wherein the determining steps is performed in relation to two sides of the motor vehicle". Sartori discloses in paragraph 20 detection devices are located on the external rear view mirror located on the sides of the car to monitor the blind spots of the vehicle. It follows then that with the devices located in both sides of the vehicle thus the determining steps are performed on both sides of the vehicle.

Regarding **Claim 22**, Sartori discloses in paragraph 20 detection devices is located on the external rear view mirror located on the sides of the car to monitor the blindspots of the vehicle, which reads on "A device for monitoring a blind spot located at a side of a motor vehicle to warn a driver of the motor vehicle that an object is located in a warning region comprising a sensor device adapted to monitor the warning region".

Further in paragraph 19 and figure 1c Sartori discloses that the detection device should have wide range of about 20 meters but only generates a warning if an object is within the blind spot at about 4.5 meters from the device. This reads on "the sensor device defining a sensor region that includes the warning region".

In paragraph 16 Sartori discloses that the device uses a method of determining travel direction by the technique based on a phase difference to obtain an estimate of the optical flow in a particular direction, to be precise in the direction of the street or road on which the vehicle is moving, which reads on "the sensor device adapted to determine a travel direction of the object relative to the motor vehicle".

In paragraph 15 Sartori discloses the device uses a method of detecting relative speed by edge recognition forming rectangles with said edges, forming rectangles with said edges and the comparing the rectangles with a set of patterns, which reads on "a relative speed between the object and the motor vehicle"

In paragraph 7 Sartori discloses that the detection device also provides a qualitative idea of the distance of the object relative to the vehicle and, therefore, determines the position of object relative to vehicle, which reads on "a position of the object relative to the motor vehicle"

Paragraphs 41 and figure 2 in Sartori discloses that circuit 15 having a CPU which two algorithms a movement detection algorithm and a vehicle detection algorithm which allows the direction of the movement as well as the speed of the object to be determined. This reads on "a control unit adapted to evaluate determined data"

In paragraph 67 Satori discloses that the logic circuit, depending on the information obtained (vehicle presence, distance of the vehicle, and relative speed) activates, for example, a group of three different colored LEDs (red, amber, green) (not shown in the Figures), allowing it to communicate different warning levels, depending on the danger. A plurality of ways of presenting the warning levels is possible: from a single red luminous signal that is activated to indicate the presence of a object in the detection area, through to complex devices, with diverse luminous, acoustic and tactile signals which reads on "a warning system configured to output a warning signal to the drive as a function of evaluation of the determined data".

Regarding **claim 23,** "wherein the control unit includes a memory adapted to store classified driving conditions and a comparator adapted to compare a current driving condition, ascertained by the control unit from the data of the sensor device, to the classified driving conditions." Sartori discloses in paragraph 15 a process where vehicles represented by rectangles with edges. The edges are then compared to a set of patterns. The set of patterns, which reads on "classified driving conditions".

Regarding **claim 24**, "wherein the sensor device is arranged one of (a) in side mirror of the motor vehicle, (b) in a rear bumper of the motor vehicle, (c) in an outer mirror of the motor vehicle and (d) in a rear light of the motor vehicle." Sartori discloses

in paragraph 20 a preferred embodiment it mount the detection devices on the external rear view mirrors.

Regarding **claim 25**, "wherein the warning system is configured to output the warning signal if: (a) the travel direction of the object corresponds to a travel direction of the motor vehicle; (b) the relative speed between the object and the motor vehicle is within a predetermined range bounded by a lower range boundary and an upper range boundary, the predetermined range including a zero value: and (c) the position of the object is within the warning region". Sartori in paragraph 67 disclose the logic circuit, depending on the information obtained (vehicle presence, distance of the vehicle, and relative speed) activates, for example, a group of three different colored LEDs (red, amber, green) (not shown in the Figures), allowing it to communicate different warning levels, depending on the danger.

Regarding **claim 26,** "means for performing a method, including: determining the relative speed between the object and the motor vehicle; determining the travel direction of the object relative to the motor vehicle; determining the position of the object relative to the motor vehicle; and warning the driver if: (a) the travel direction of the object corresponds to a travel direction of the motor vehicle; (b) the relative speed between the object and the motor vehicle is within a predetermined range bounded by a lower range boundary and an upper range boundary, the predetermined range including a zero value: and (c) the position of the object is within the warning region." Sartori discloses a paragraph 21 and figure 2, circuit 15 having a CPU which two algorithms a movement

detection algorithm and a vehicle detection algorithm, which allows the direction of the movement as well as the speed of the object to be determined.

Further in paragraph 67 Sartori discloses a logic circuit, depending on the information obtained (vehicle presence, distance of the vehicle, and relative speed) activates, for example, a group of three different colored LEDs (red, amber, green) (not shown in the Figures), allowing it to communicate different warning levels, depending on the danger.

Regarding **claim 27**, Sartori discloses in paragraph 69 detection devices is located on the external rear view mirror located on the sides of the car to monitor the blind spots of the vehicle, which reads on "A device for monitoring a blind spot located at a side of a motor vehicle to warn a driver of the motor vehicle that an object is located in a warning region comprising a sensor device adapted to monitor the warning region".

Sartori discloses a paragraph 21 and figure 2, circuit 15 having a CPU which two algorithms a movement detection algorithm and a vehicle detection algorithm which allows the direction of the movement as well as the speed of the object to be determined, which reads on "means for determining a relative speed between the object and the motor vehicle; means for determining a travel direction of the object relative to the motor vehicle; means for determining a position of the object relative to the motor vehicle"

Further in paragraph 67 Sartori discloses a logic circuit, depending on the information obtained (vehicle presence, distance of the vehicle, and relative speed) activates, for example, a group of three different colored LEDs (red, amber, green) (not

shown in the Figures), allowing it to communicate different warning levels, depending on the danger, which reads on "means for warning the driver if: (a) the travel direction of the object corresponds to a travel direction of the motor vehicle; (b) the relative speed between the object and the motor vehicle is within a predetermined range bounded by a lower range boundary and an upper range boundary, the predetermined range including a zero value: and (c) the position of the object is within the warning region"

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sartori in view of Zoltan G Sztankay U.S Patent 3891966. (Hereafter referred to as Sztankay)

Sartori discloses all the limitations of the claim with exception of "comprising generating a warning if the relative speed is greater than the upper range boundary."

Sztankay discloses in column 2 lines 47-52, in which the signal processor the range and closure (relative) velocity of a car and an alarm 5 may be activated if the range or closure (relative) velocity fall outside a predetermine limits which includes upper limits

Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Sartori with Sztankay to avoid collision as taught by Sztankay.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ojiako Nwugo whose telephone number is (571) 272 9755. The examiner can normally be reached on M - F 7.30am - 5.00pm EST, Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian T. Pendleton can be reached on (571) 272 7527. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OKN

BRIAN TYRONE PENDLETON
SUPERVISORY PATENT EXAMINER